The Baltic Sea Project

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New BSP programme „Environmental Measurements“

Fishery Course no. 5 in Poland 2008

Švietimo ir mokslo ministerija

The Baltic Sea Project

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Cover: Students from Nacka Gymnasium on the ship's sail.
Photo: Susanne Mellvig

The BSP objectives are to:

- increase the awareness of the students of the environmental problems in the Baltic Sea area and give them an understanding of the scientific, social and cultural aspects of the interdependence between man and nature,
- develop the students' ability to conduct research on changes in the environment,
- encourage students to participate in developing a sustainable future.

The BSP works with the following means:

- building networks of schools, teachers and educational institutions in the Baltic drainage area,
- creating and developing educational approaches and joint programmes for environmental and international eduaction,
- organising joint activities and events, publishing the BSP Newsletter and issuing other relevant information.

The basic characteristics of the BSP schools:

- active participation in looking for solutions to the environmental problems in the Baltic Sea area,
- networking,
- pilot function in promoting environmental education in the spirit of the Rio Declaration, Agenda 21 & Baltic 21 and Agenda 21 for the Baltic region.

The educational approachfor the BSP is to:

- achieve balance between a holistic view and individual subject studies,
- change the role of the student from passive recipient to active constructor,
- change the role of the teacher from supervisor to guide in a learning process,
- use networks to provide participants with opportunities to learn and pass along new ideas,
- use international co-operation as an inherent element of school work.

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Photo: Ingrida Ažusenytė

Dear Readers,

Half a year has already passed, and it has once again been rich with events.

First, I would like to introduce some articles from the third BSP newsletter which is being published in Lithuania.

This summer was full of events—as many as five summer camps for schoolchildren were organized in different countries. You will have the opportunity to read about these camps and admire some beautiful photos in the section "Events". We offer our sincere thanks to the organizers who worked in these camps so earnestly. Incidentally, the International Research School in Meri-Pori is an annual event, and this year representatives from Germany participated for the first time.

In September, the fifth Fishery Course was held in Gdynia (Poland). For more information on this seminar see page 14.

In the section 'Programmes" you will find an article by Bird Ecology Programme coordinator Andrzej Sliwinski on spring birds, as well as an article by schoolboy Tadas Naujokaitis from Lithuania about the mysterious world of coots, and a short description of the works of Birutė Jasinskienė from Kaunas District school, a participant in the Environmental History Programme.

Pupils from Nacka Gymnasium (Sweden) enjoyed an intriguing journey onboard the ship, "Tre Kronor af Stockholm". The aim of this journey was to promote better protection of the Baltic Sea environment. For more information on this journey see page 21.

The Kaunas Centre for Young Tourists in Lithuania is also involved in active and meaningful activities. You will find more information about the work carried out by this Centre in the article on page 23. Perhaps this article will prompt new ideas for your activities.

As in the previous issue, you will find an article on Baltic cod. We are not indifferent to the fact that they may be facing extinction!

The section "Varia" introduces two campaigns aimed at the cleansing of the earth. The article describes the kite festival in Lapės near Kaunas, and the rubbish collection campaign in Vilnius. Incidentally, the latter is an annual event and always attracts many sponsors.

The section "Measurements" presents descriptions of various investigation methods. Feel free to try them!

In conclusion I would like to announce two more news items: Firstly, we have a new programme "Environmental Measurements" coordinated by Simo Korpela from Finland. For more information on this programme see page 5. I cordially invite you to participate!

Secondly, for the time being, I am leaving the position of coordinator and would like to introduce my "successor" Miglė Simanavičienė.

Rūta Jociūtė-Žolynienė
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Dear Colleagues,

From my childhood until the present I have been enthusiastically involved in environmental activities. It is a main reason why I finished ecology studies at Vilnius University. At present, I work as specialist of the environment in the Lithuanian Fund for Nature, and for two months already, I have been the **new National and General Coordinator** of the Baltic Sea Project in the Lithuanian Centre for Young Naturalists. I am very happy to have the possibility to work in such a project as BSP. This responsible position requires even more effort and self-development.

It is not very easy to follow in the footsteps of the former coordinator, Rūta, who managed the project perfectly. Nevertheless, step-by-step I am getting more and more involved in the BSP activities.

I would like to thank the superb BSP group for a warm welcome and full cooperation. I hope to satisfy the expectations of you all.

Finally, I would like to thank all the BSP national and programme coordinators, teachers, pupils and members of my team for their support, ideas and suggestions.

Let us work together for a better future for the Baltic Sea region environment!

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Photo: Simo Korpela

New BSP programme: Environmental Measurements

The aim of this new programme is to combine all efforts that try to study the state of nature by the means of chemical and physical analysis and new experiments. The programme especially gives an opportunity to physics and chemistry enthusiasts who would also like to do their part in the Baltic Sea Project. Of course, in all environmental studies the basics is in biology, but all kinds of teachers and students can and will also like to help and provide new ideas and results in the study of nature. I believe that this new programme can be useful in co-operation with the other BSP-programmes.

Here are some already existing efforts in the Environmental Measurements programme:

- Pine Needle Project: eighteen schools from ten countries
- Chemical Water Analysis: eight schools from five countries
- Moss Bag Study (heavy metals in the air): five schools from three countries
- Disc Study (Susanne Mellvig)
- Wastewater Purification Simulation, etc…

I hope that within this new programme the enthusiasm of new science teachers and students to participate in BSP activities will grow. This could be a fertile ground for all new ideas and co-operation with different kinds of school groups inside the Baltic Sea Project. I also hope that this programme could help other programmes by offering new ideas and possibly also common research material for them. We see that co-operation with all possible partners is very much needed in environmental work. And with regards to our BSP-project, comparable environmental study results are the way to understand our situation all over the Baltic Sea as a whole.

In research work, all the different branches of science have always helped each other. For instance, biologists have used the help of physics and chemistry laboratories. The help is necessary, but the sampling, conclusions and reports are of course done by the original participants. I therefore do not think it is bad if some research centre or maybe industrial laboratory helps us gain reliable and comparable results of analyses. The intention is, by no means, to prevent or underestimate our very own equipment, observations or measurements, but to give aid and comparability to them. The equipment for environmental measurements is getting better everywhere all the time, and in our municipal laboratories, labs belonging to small industry, and of course, just in our schools we can do more and more. All these possibilities are really worthwhile.

I hope this programme can be the basis connecting all kinds of new ideas in environmental research. Inside it we can try and develop different kind of activities in nature studies. After having enough data, maybe there would be the opportunity to conduct things such as teacher's training courses and seminars. There would also be a possibility to make a new learner's guide on these issues.

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Photos: Anda Deksne, Daiga Martinsone, Ingrida Tamane, Inara Zevelete

BSP summer seminar in Ventspils

The Baltic Sea Project teacher's seminar was held in Ventspils from 25 to 27 August. During the seminar, we worked with three BSP programmes: Environmental History, Rivers and Water Quality.

Why did we organize the seminar in Ventspils?

Ventspils is the sixth largest city in Latvia and one of the largest ports in the Baltic Sea region. It is located in the north-western part of the country, on both banks of the Venta River. The initial development of the city of Ventspils is related to a Livonian Order castle, which is one of the oldest medieval fortresses in Latvia. The first historical references to Ventspils Castle date back to 1290, which is also considered the year that the city of Ventspils was founded. The city sits on an area of 5536.7 hectares, and the number of registered inhabitants in Ventspils is 44,100. Ventspils is the northernmost ice-free port on the eastern coast of the Baltic Sea and is used for the trans-shipment of oil, oil products, and chemicals. A large environmental and accident risk for the population of the city of Ventspils is created by the storage, loading, and export of large volumes of crude oil and oil products, ammonia, and other hazardous substances. A majority of the employees in Ventspils work at companies either directly or indirectly linked to the operation of the port. Over the past ten years, remarkable changes have taken place in the city.

What did we do at the seminar?

On the first day of the seminar, we got acquainted with the city of Ventspils from a historical, cultural, and social point of view. We visited historical places, industrial area, well-tended parks, paved squares, and promenades of Ostas Street and Blue Flag Beach, and the teachers prepared guides for student excursions in Ventspils.

Since the city council pays special attention to the maintenance of the city environment, on the second day we had a meeting at the city council with Ilga Zilniece, head of the Environmental Supervising Department. She introduced us to the implementation of the Ventspils environmental policy plan. There were many good examples of different activities with which Ventspils has managed to transform itself from an ecological disaster area to well-kept and environmentally conscious city:

1. A successful instrument for implementing environmental policy in relation to companies is the environmental protection licensing system that has been functioning in Ventspils since 1994.

2. All companies situated in the territory of the port have undertaken to do a lot of actions within its environmental protection policy that provides for detection and reduction of factors negatively affecting the environment; correspondence of the company activities to the stringent environmental standards; education of employees and their involvement in realization of the companies environmental policy; invitation of business partners to use eco-friendly technologies, products and services; and the provision of information to society about the companies' environmental policies and their achievements in this sphere.

3. Water quality control in Ventspils is the responsibility of two institutions. The Hydrometeorological Bureau undertakes the chemical analysis of the water quality in the Baltic Sea and the Venta River and the Environmental and Health Centre verifies the microbiological quality of water at the beach and in the Venta River and Busnieku Lake during the summertime.

Our tour on the boat ***Hercogs Jekabs***, which took us on a 45-minute voyage along the estuary of the Venta River, was a tremendous possibility to get acquainted with the city of Ventspils and the industrial activities of the port from a different angle.

In the laboratory of the Ventspils gymnasium, we completed different chemical analyses of the sea water and river water. We had discussions about how to use these methods in our school curricula and how to improve the "Water Quality" programme.

On the third day, we visited Jurkalne, Alsunga, Edole and Kuldiga—places with beautiful natural areas, traditions, architecture, and historical legends.

Some interesting facts from our excursion:

The current name, ***Jurkalne***, was adopted in 1925 thanks to the beautiful coastal cliffs covered by stately pine trees. In the Middle Ages, Jurkalne was called Felixberg, named so because several centuries ago a sailing vessel was caught in a storm. The captain didn't lose hope and promised that if the crew safely reached land, he would build a church at the landing port. A miracle occurred, the wind changed, and the vessel ran aground on a sandbar not far from Jurkalne's steep coastal cliff. The captain kept his word and built a church. He named it Felixberg (Lucky Mountain).

Alsunga is popular in Latvia because its people, known as the ***Suiti***, have preserved their colourful, unique ethnographic traditions.

The Medieval castle in ***Edole*** was built for the bishop of Piltene in the 13th century. After reconstruction in 1835–1841, Edole Castle became one of the first samples of Neo-Gothic architecture in the Kurzeme Region.

Kuldiga, the ancient town of Courland (Kurzeme), lies on the Venta River where the waterfall Rumba, the widest in Europe, has formed. In 1561, the Grand Duchy of Courland was founded, and Kuldiga became one of its capital cities. In its golden age under Duke Jacob (1642–1682), the city was a centre for manufacturing and shipbuilding. The pride of Kuldiga is its ancient brick bridge across the Venta River, which was opened after renovation this year.

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Photos: author

Research School 2008

The Research School is intended as a boarding school. Sixteen students aged 17–19 go there and work on research projects. The laboratory is beautifully situated in the countryside of Norrtälje, Sweden, right on the shore of Lake Erken.

This year sixteen students from eight countries (Lithuania, Estonia, Poland, Ukraine, Russia, Finland, Sweden and Latvia) went to Erken Laboratory. We were two girls from Latvia: Diana Kauce and Anda Penka. From 9 June to 5 July, students lived in the apartment near the laboratory.

The main objective of the Research School is to let the students work with scientific research. This we did in the eight projects. In the projects, the students themselves are responsible for asking and answering the scientific questions that appear. We had three fieldwork days and we worked independently in the laboratories. We were consulted by supervisors. One of them was the project leader Karin Beronius. Every morning we had lectures about the theme of limnology, including discussions with famous scientists. But in our free time, we had a very great time playing football and badminton, and we had barbecue and pizza evenings and other activities after the hard work in the laboratory.

We finished with a presentation of our project and we also made a scientific poster. At our final dinner we and all our supervisors got certificates and some gifts from Erken Laboratory. This month was very great and full with new knowledge in science and great practice in English. We also got to make a lot of new friends from other countries!

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Photos: Simo Korpela

Camp Schools and Environmental Research

Meri-Pori Camp

The 15th Environmental Camp School of Meri-Pori Upper Secondary took place on 25–30 May this year. The participants, teachers and students, came from Germany Ahrensburg Carl-Sonnenschein Schule and Kiel, School no 5 in Monchegorsk, Russia, Kivilinna Gymnasium in Tartu, Estonia, and Ivalon lukio in Finland. From Lithuania we had as a guest the Baltic Sea Project General Coordinator Ms Rūta Jociūtė-Žolynienė. Our organizing group consisted of teachers and the second year environmental student group.

During the first days, the participants tried to get acquainted with each other. They also got some information from our school and from the Finnish school system. They visited the city of Pori and listened to a lecture on the state of Pori's environment as well.

Days

Were full of different kinds of official activities like:

- Walking in natural areas
- Walking in the city
- Our own environmental research and making reports
- Lecture about the state of the environment in Pori
- Visit to *Arkki Nature House* and wind power farm
- Visits to coal and nuclear power stations
- Official teachers meeting hosted by the city of Pori
- Free programme in the Yyteri camp area
- Environmental working party in Säkylänharju garrison area
- Non-environmental biscuit and cola afterwards in the military home of the garrison
- Having a good breakfast at Kemira Pigments on Friday
- Having still better lab tour concentrating on pine needle studies later
- Getting acquainted with each other
- Bittersweet farewell on Friday noon

Evenings

If the days in camp school are action packed, evenings are also full of fun and activity, at least for those who are up to it. Monday is traditionally the getting-to-know-each-other evening, when the Finnish students, with all sorts of games and plays, try to help the nationalities mix and click. Every evening at the common house, there is an evening snack of famous Finnish MAKKARA (sausage, with sandwiches and tea) and other delicacies provided by the culinary wizards of the school cafeteria. Then there's the SAUNA, a unique Finnish experience of a hot and humid little room, where you sit high up on wooden benches and throw water on hot rocks in KIUAS, and believe me, that hot steam coming from the KIUAS is a treat for all the sore muscles you've gotten traipsing around western Finland's marshes and beaches. The one-and-only, true Finnish sauna is definitely among the experiences no one should miss! For those brave enough, there is a little pond by the sauna: a dip in it after the hot sauna is not recommended to those with a weak heart. For those with energy to spare, there's football, volleyball or baseball, just to name the most obvious ones, and during these games international friendships are truly born. And of course the best bit of this international camp school is just sitting in someone's cabin, talking, and laughing to the wee hours of the night, accompanied by music and singing.

Otepää Camp, June 10–11

Early on Tuesday morning, we start our journey to Estonia. Three students are sleeping in the back seat, Simo is driving, and Anja is reading the map. Our goal is Kääriku, Otepää, the summer camp of Tartu Kivilinna Gymnaasium. We take the fast ship in Helsinki and from Tallinn our journey goes on through Estonia to Tartu and Kääriku. The landscape in its summery beauty keeps us happy: our summer holiday has begun!

Nature studies

In Kääriku Estonian students welcome us cheerfully, and we find Helgi Muoni and other teachers. After lunch our program begins; we take part in a work shop of ***Veelomaastik ja veekemia***: Students take water samples from Lake Otepää, and with Merck's water chemistry analysis set they get values of nutrients by comparing colours. They also examined water plants and very small water animals and insects, especially the exciting leech.

Wastewater purification simulation

In the evening as the students practised their environmental drama presentations, we teachers had time to work together. We Finns had brought with us chemicals and all materials. Our workshop for eleven teachers used ferric compounds as water treatment chemicals. We experimented with phosphate solution in order to take phosphates away from the solution chemically by creating an insoluble ferro- or ferriphosphate precipitate. The colour of the solution and the amount of insoluble salts depended on the pH-value and ferric compound. We also measured with the spectrophotometer the amount of phosphates from two samples: purified waste water from purification plants. The results were Pori 0.09 mg/l and Tartu 0.50 mg/l, not so bad either of them!

Wastewater purification simulation

Two groups of ten students worked hard for two hours. They made experiments with phosphate solution, nearly the same programme as in Otepää. It was very interesting to discuss with students the problems of phosphorus in the Baltic Sea area and the use of ferric compounds as a water treatment chemical. We also measured with the spectrophotometer the amount of phosphates from three samples: Pori purified waste water: 0.04 mg/l, Vilnele River water 0.08 mg/l, and well water from the town of Salakas 2.49 mg/l.

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Vilnius Camp August 22–24

After a hard school day on Friday we drove from Pori to Helsinki airport and flew to Vilnius. The camp 'Nature, creation and me' was held in the Lithuanian Young Naturalists Centre in Vilnius. On Saturday morning, we teachers had the hard job of getting a water sample from the Vilnele River, which flows quite near the centre, but the path was very narrow and on the slope of a hill!



Photos: Peter Uhl Pedersen

Fishery Course no. 5 in Poland 2008

AN INTERNATIONAL WORKSHOP
A COOPERATION BETWEEN POLAND AND DENMARK

The 5th workshop concerning fishery, sustainability, and Coastwatch has been hold in Gdynia, Poland. The participants were schools from Denmark and selected schools from the BSP counties. The host for this workshop was X LICEUM OGÓLNOKSZTAŁCĄCE. Patrycja Wojtkowiak from Gdynia, Poland and Søren Levring from Sønderborg, Denmark were responsible for planning and carrying out the plan. The municipal council of Gdynia paid all expenses doing the workshop, while the Danish ASP-union covered travelling expenses for the Danish, Estonian and Russian groups.

The meeting was planned to last from 22 to 24 September. But for the Russian and the Danish participants this was changed for logistic reasons to 20–25. We therefore had the opportunity to visit or revisit the beautiful and interesting cities of the Gdansk area.

We were collected by bus in Lech Walesa Airport and transported to our hotel in Gdynia (Akademia Morska, Studencki Dom 3) and provided accomodations. The nearest place we could eat was at Mc Donalds. So we did. And none of the students complained about this. Sunday we went by local train to Gdansk. A retired Polish teacher gave us a tour of the most interesting and attractive parts of this old Hansa city. Some of us saw the breathtaking view from the famous gigantic church (400 steps up in the tower). This time we ate at a good traditional Polish restaurant to experience the local cuisine.

On our way home to the hotel we decided to visit Sopot, a seaside resort in the middle of Gdansk and Gdynia. Here we could enjoy a fine sandy beach and from a huge pier look upon the seawater and its colour and transparency. We could also investigate the seaweed on the shore and the general amount of littering. Later the Estonian group came and were also housed at Akademia Morska, Studencki Dom 3.

The next day the seminar started at X LICEUM OGÓLNOKSZTAŁCĄCE in Gdynia. We had a very warm welcome by authorities from the city: Ewa Łowkiel and the headmaster of the school, Magdalena Piwowarska. A lot of students made different appearances. Among other things, we saw students work on experiments to measure the salinity of seawater.

After lunch we went to the Gdynia Aquarium. It was an interesting place to visit and we got a lecture on Baltic Sea ecology. The students did some practical work with microscopes to differentiate close species of fish that come from the shallow waters of the bay. Very interesting!

At Tuesday we had an early start to catch an early train to Hel at the edge of the peninsula north of Gdansk. This promised to be a very pleasant and interesting trip. Not only was the transportation a great experience. The scenic natural beauty we observed while passing by on the train was remarkable.

After settling into our accommodation at the Marine Station of the Gdańsk University in Hel, we went to a sealarium where seals living in the Baltic Sea were fed. The intelligent animals showed that they had learned a specific behaviour to get their food.

Later we got insight into the exiting problems concerning the tagging of fish. This is a kind of parallel to the banding of birds. Naturally there is a lot more to consider before working. And in regards to the title of our workshop and the importance of the sustainability of our behaviour while fishing the seas, this was an important input.

Then we went on an excursion at sea on a former fishing vessel that is now nicely restored. Some of the participants got an opportunity to angle. The weather was very calm and nobody got seasick this time.

On solid ground again we went to the coast again, this time with a huge dragnet operated by two students in waders. We were told that we got a better catch of ***Crustaceae*** and ***Osteichthyes*** than last time the marine station was out on investigation with students!

After this we were invited to another lecture about the ecology of the Baltic Sea. In the evening the students had a good time together. After these days all timidity had gone

away and all could enjoy the time together across nationality and linguistic barriers. The teachers also experienced a cosy evening together on the first floor.

The next day we went back to Gdynia to learn about fishery monitoring. All countries have difficulties getting valid information about their national fisheries. And here in Poland is no exception. It was very interesting to learn about the possibility to monitor where a single Polish vessel was as it moved around the Baltic Sea.

The journey home went without problems. We all agreed that we had another great international workshop. We learned a lot—not only facts about sustainability and fisheries, but also information about the culture in Poland and about the nice and hospitable Polish people.

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Photos: Image DJ

Summer Camp for Nature Lovers

From 21–24 August 2008, I had the pleasure of attending the camp "Nature, Creativity and Me" under the Lithuanian Baltic Sea project at the Young Naturalists' Centre in Vilnius. The camp was attended by pupils from Kaunas, the Kaunas district, Vilnius, Alytus and Kaišiadoriai. Only two of us were from the Prienai district: myself and Narek Tadevosyan—both pupils of the Prienai Žiburys Gymnasium. On the first day, the opening of the camp took place; we became acquainted with the agenda and established rules of good behaviour. The ecodrama class led by Raimonda Medeišienė was particularly interesting. It was fun to create a new imaginary environmentally conscious planet and city. By creating the new future, we tried to solve various problems, and got to know each other. We also spent a great evening around the fire.

On Friday, we had a lecture and discussion "Global Greed of Humanity". We learned how people used natural resources in ancient times and how they use them now. This gave me food for thought: perhaps, now we do not merely use natural reources, but rather abuse nature too much. After dinner, we learned folk dances and played Lithuanian folk instruments. and in the evening we watched the movie "An Inconvenient Truth" about global warming. I believe this movie has already been seen by many, and if not, it's well worth watching. I liked the comparison made with a frog which was presented in the movie: it's a pity that people don't feel and don't understand the consequences of global warming; they don't even think of it.

On the third day, we had a lesson about plants, their uses, and their beneficial and harmful properties. Each plant may be both beneficial and poisonous. I think that knowing the effects of plants also enables me to think about their practical applications. After dinner, we listened to exciting stories about nature, trees, animals, and interesting buildings; and we created legends of our own. A competition was held to select the best writers. Later we attended a lecture about pollution given by Finnish lecturers. I really liked their practical classes about contamination of water by metals. On the same day, we went on a walking tour through the Pavilniai and Verkiai regional parks. It was a real tourist tour: we waded through creeks and swamps, and travelled through a tunnel. We felt like real tourists.

What I liked most about the camp was the proximity of nature: from the city to nature. Indeed, there were many interesting subjects: chemical experiments, creative classes, and new information about plants previously unknown to me. In the camp, I met new friends and acquired new experiences. I think such camps were extremely beneficial to me and would be beneficial to a wider circle of my peers. Such classes encourage us to love nature.

I am sincerely grateful to the organisers for the opportunity to attend such a wonderful camp. Thank you.

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Photos: Andrzej Śliwiński

The messenger of spring

The white stork *(Ciconia ciconia)* is a well known, permanent element of many European countries' agricultural landscape. It is a large wading bird 100–125 cm tall, with a 195–220 cm wingspan and a weight of 2.3–4.5 kg. It is completely white except for its black wing flight feathers and its red bill and legs, which are, however, black on juveniles. It walks slowly and steadily on the ground. Like all storks it flies with its neck outstretched.

White storks breed in open farmland areas with access to marshy wetlands, building a stick nest in trees, on buildings, or on special platforms. Because it is viewed as a bird of good luck and a bearer of harmony to a family on whose property it nests, it is not persecuted. In some countries people even believe that the storks are responsible for bringing babies to new parents. That is why it often nests close to human habitation.

According to the 6th International Census of White Stork in 2004, there were 52,500 pairs in Poland, 13,000 pairs in Lithuania (the highest known density of this species in the world), 10,700 pairs in Latvia, and 2,650 in Estonia. In Germany there were 4,485 pairs, while in Denmark there were only 3 pairs. North of the breeding range in Sweden there were 29 pairs. Since the previous census in 1994, only in Denmark has the stork population decreased. In Latvia it remained stable, but in other countries it increased.

Poland, as the biggest refuge of the white stork, plays a leading role in the protection of this species. The maintenance of meadows and prevention of the drainage of wetlands are crucial for the stork population.

Within the four years from the last census, something dramatic happened: 10,000 pairs of storks disappeared from Poland. We can compare it with a disappearance of 8 million Polish citizens from the entire population. Scientists cannot explain how it happened.

Storks feed mainly on frogs and large insects, but also young birds, lizards, and rodents. On their way to their wintering grounds in Africa they feed on locusts, but the amount of such insects has recently decreased due to the use of pesticides and droughts in this region caused by the climate changes. Another threat is illegal hunting on migration routes and wintering grounds.

In Poland, unfavourable conditions in the north, such as changing large areas of meadows into forests or walnut plantations, are also responsible for the dramatic decrease in the stork population. Because of financial support from the European Union, many farmers relinquished traditional forms of cultivation. The specialisation, concentration and intensification of agricultural production that have recently occurred are widely recognized as potentially threats to biodiversity and conservation. Many species have a direct interdependence with agriculture. A homogeneous field of wheat or rye is a desert for a stork and other birds. Hardly any species live there. This sharp decline affects not only storks but also other popular birds typical to the agricultural environment. Among others there

are the quail ***Coturnix coturnix***, lapwing ***Vanellus vanellus***, corncrake ***Crex crex***, and yellow wagtail ***Motacilla flava***.

The links between the richness of the natural environment and farming practices are complex. While many valuable habitats in Europe are maintained by extensive farming, and a wide range of wild species rely on this for their survival, agricultural practices can also have an adverse impact on natural resources. Pollution of soil, water and air; fragmentation of habitats; and loss of wildlife can be the result of inappropriate agricultural practices and land use.

The future of the stork and many other species is in our hands. Sustainable agriculture should be widespread among farmers if we do not want our children to know storks only from pictures in books.

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Photos: Tadas Naujokaitis

The mysterious world of the Coot

The coot is a common bird you can come across anywhere. Thus, for many, he does not make for an interesting object of observation. But if we just had a closer look into his world, if we monitored the daily life of every bird throughout the year, we would get a rather different impression of the coot. It's not true that real life dramas and feelings are alien to a bird. The world of birds is far from simple. Can you believe that juvenile birds may leave their family and join another, completely foreign family, and ignore the invitation of their parents to come back?! But we'll talk about that later.

It is not difficult to recognise the coot—this is a black bird with a white beak and a white corneous plate. At first, newborn coots are very beautiful and interesting: all black with a yellow, red and even bluish head. Juvenile coots have plainer colours: their top is greyish brown with a whitish shade underneath. The nest is constructed of various materials that can be found in the near vicinity, usually along the bank. Normally, coots lay 7–9 eggs.

The observation of coots has been carried out from 2004–2008, mostly at Garliava Dam. Every year, several pairs of coots brood in this pond (three pairs in 2006, 2007 and 2008). In 2008, the coots had no luck at the dam: four nests were abandoned, one pair failed to hatch altogether, another pair hatched only one chick, and in another one of the parents perished. The previous years were more successful.

Coots do not usually spend winter in Lithuania. They show up in Lithuania only in the first half of spring. During the period from 2004–2008, they showed up at Garliava Dam on 10 March in 2008 at the earliest, and on 3 April in 2006 at the latest. Just as the coots return, various bodies of water suddenly spring into life after winter. Fights for nest territories then ensue. But the fights usually come down to simply chasing each other away. The best chance to see a real fight presents itself when baby birds have already hatched. Should the invisible but very definite line separating nest territories be crossed, the owner will immediately try to drive away the invader. In such cases, coots often attack each other using their legs and wings. Such a fight can be seen in one of the pictures.

Midway through the summer, all former order disappears. Then, after just a few days of absence, you may have a hard time figuring out what happened and which birds now reside where. Taking over nest territories becomes almost commonplace. But sometimes this is more important than it seems. On one occasion a family disappeared, and another one moved into its territory. I could not understand where the parent, with four still quite young offspring, could have disappeared to. I even scoured through the reeds—not a whiff of them. A few days later the whole family suddenly reappeared: it turns out they were hiding somewhere in the reeds. Just as the returning family was spotted by the other family which had already settled down in their territory, the single parent was immediately chased to the other end of the dam (the other adult bird had perished

before) and was not allowed to return. Having remained alone, the juvenile birds had to swim more than 300 m through completely unfamiliar territory in order to meet their father. For such young birds this is quite a feat.

The birds did not attack the young ones after chasing away their father. Three of the chicks met together with the father, and one of them made it separately, but also safely; a touching moment. Oh, if only I knew that the very same youngsters would soon leave their father and run off to the other family that chased him away!..

15 July 2008: This is when I witnessed the strangest event I have ever observed in the life of birds. I would never have thought that such a thing could happen. But it only proves that the world of birds is very interesting. Four juvenile birds, not even three months old, voluntarily left their father and went to live with the other family which had one youngster at the time. The father tried to get his youngsters to come back but they would not go with him. Soon the family accepted the youngsters into their midst and fed them like their own. The father still tried to get them back for the next few days but the youngsters remained with the new family, which became their own.

In 2008, I observed the activities of coots throughout the day. Well, I didn't really get to see the beginning of their day

since coots are very early morning birds. A detailed observation of their activities took place between 3:30–22:57. It has become clear that the night rest of coots (when they already have offspring) starts at ~22:00, whereas they start getting up before 3:30. The main activities of coots during the day are getting food and preening their feathers. But it should also be mentioned that coots, just like people, don't do the same things every day. Hence they don't always act exactly the same way I have just described.

This is just a very small part of the coot's life. Although it is a common bird, we still don't know it very well. Our observations can never truly end—we can always discover something new, unknown and unexpected. And the recounted event with the youngsters (their defection to another family) proves this even more. It is not important what bird we observe—thrilling moments, unique impressions and time well spent is guaranteed; because the world of birds is amazing, spellbinding and endlessly exciting.

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Exploring the History *of the* Environment

While working under the programme "History of the Environment", members of the "Ainiai" club of environmental and regional studies at Mastaičiai Basic School in Kaunas District decided to investigate how their grandparents and forefathers adorned their place of residence. Pupils saw the meaningfulness of the tradition of their ancestors in decorating their homesteads with oaks. The children themselves continue this beautiful tradition—planting saplings in the homesteads of their grandparents.

Gintarė (Student of Mastačiai Basic school) succeeded in collecting information about four generations of her ancestors who have already been living in the same place—in a village they founded by themselves which was named after her great-grandfather—for a hundred years.

We suggest that readers of the newsletter familiarise themselves with the methodology of this work and investigate the history of their own families. You are sure to make many discoveries!

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Photos: Sussane Mellving

Opportunity of a lifetime

Twenty students from Nacka Gymnasium, which is located in Stockholm, Sweden, had the opportunity to sail with the beautiful ship ***Tre Kronor af Stockholm*** this summer on its maiden voyage. We worked as ordinary sailors and we were treated as any other member of the crew. As ambassadors for the environment of the Baltic Sea, we from Nacka Gymnasium had the chance to make a statement for the environment, since the ship also works as a tool for youths to make their voices heard.

We were assigned different routes; we and two other friends got the trip from Riga to Visby. So, on 26 June we left Stockholm and Sweden for Riga and Latvia. Tired but excited we arrived at the harbour, and a few hours later we saw the beautiful ship slowly approaching, and this was the real start of the trip for us.

The municipality of Nacka is involved in work for a better environment for the Baltic Sea, which is why students from various upper secondary schools had the opportunity to make this trip. Since Nacka Gymnasium is engaged in the Baltic Sea Project, we had the chance to do different projects about the Baltic Sea. Every time we arrived at a port, we put up tents where all our projects were printed on the walls. We answered all questions curious visitors had about the critical situation in the Baltic Sea.

Our project is about the problem with eutrophication in the Baltic Sea, so during the trip we measured the levels of chlorophyll A in the water. We also placed measuring equipment in the archipelago of Stockholm to study the organisms that grow there. The equipment we have been using is a 'CD racket'. They are built with tubes that hold five CDs apart, they hang from a rope, and we placed them in different spots around the archipelago. All of our results will be presented at a workshop that we will host at the Vision and Tradition Conference at Nacka Gymnasium on 26–30 April 2009. All the other projects will also host workshops and present their projects at this conference.

One group did research about alien species in the Baltic Sea, and how they affect the sea and where they come from. Another group studied the economical effects of too much cod fishing and the history of cod fishing in the Baltic Sea. Some other projects are ***Seals and their ecological role in the Baltic Sea***, ***Common sea guillemots in the Baltic Sea*** (how sea birds are affected by the overfishing of cod in the

Baltic Sea), ***How to calculate the stock of cod in the Baltic Sea***, ***Great cormorant*** (opinion about the cormorant is divided).

Two days later we were heading north-west, out of the Gulf of Riga. At the beginning, we didn't have much wind in our sails. But as we drew nearer to the Swedish coast, the wind increased and during the last part of our trip, between Huvudskär (an island in the archipelago of Stockholm) and Gotland, we experienced some good sailing. During the journey, we had it all: bad weather, rough sea, calm sea, good and bad wind, and of course some sunny days. On the ship, we were part of the crew and had to do all the things that the more experienced crew members did

such as climb the rig, steer the boat, and clean toilets. It's a varied life on board a sailing ship; some things are hard and some things are boring, but it all pays off when you're sitting at the prow just watching the boat cruising and listening to the sea.

Many thanks to the crew on board brig ***Tre Kronor***, you made this trip a blast.

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Protect nature – protect yourself

Every year during the pupils' summer holidays, a group of the Kaunas Centre of Young Tourists participating in the Baltic Sea project goes on a trip into the natural environment for a week. Sailing on inflatable rafts along Lithuanian rivers, they examine the quality of water in those rivers. Chemical analysis is performed by the school's water research laboratory; it shows the condition of water during analysis. Biological research (water organisms are sought) reflect the long-term condition of the water. Water quality research is carried out when sailing past any larger settlement or affluent. While sailing, pupils observe the vegetation along the river banks, as well as springs and water birds, and identify the polluters. During these trips, pupils clean the camp-sites, and various quizzes take place, such as "Do you know these plants?", and "Lithuanian rivers and streams". During these traditional trips, the rivers of Žeimena, Merkys, Šventoji and Neris have already been sailed and explored.

Environmental education is continued throughout the school year: the educational programme "Green Robes of Kaunas", the environmental contest "Nature at Our Side" and Earth Day with the environmental clean-up and the erecting of nest boxes are organised. By trekking through the forest parks of Kaunas or educational tracks of the Kaunas Sea Regional Park, pupils become familiar with forest, field and water ecosystems and rules of camping in a natural environment. In early spring, pupils will begin fenological observations, which are particularly important for encouraging urban children to love the natural environment that surrounds them.

Nature loving pupils also travel along the coasts of the Baltic Sea: they observe the variety of vegetation and coastal areas in the Kuršių Nerija National Park and the Seaside Regional Park.

Our group extends the invitation of friendship and co-operation to ecotourists from other countries participating in the Baltic Sea project.

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Modern Fishery

Photos: JOHN FOXX IMAGES

The Baltic Sea is landlocked by nine great countries. They all differ greatly from each other in terms of culture, labour market, population, economy, and language. But the one thing they all have in common is responsibility for the environmental situation of the Baltic Sea. The Baltic Sea is the home of thousands of animal species, and millions of migratory birds pass over every year. The fish stocks provide an income for many fishermen around the coasts. Cod is the most important species for commercial fishing in the Baltic Sea, but also the most endangered. Sustainable methods of fishing are vital to ensure the further survival of the cod. If fishing continues with the same intensity as today, the cod will soon be extinct. It is therefore important to get a clear picture of how modern fishing looks today and how it affects cod stocks.

The common fisheries' policy has so far not made catches of cod beyond the agreed TACs (Total Allowable Catches) stop. Neither has the fishing of immature fish ended. Some fishing gear still reduces the amount of fish that should contribute to stock renewal. The result of this will be less catches and job losses in the long run.

The recommendation concerning the fishing quota for cod was set by the ICES (International Council for the Exploration of the Sea) at 28,000 tonnes in 2003. The agreement of TAC was set at 75,000 tonnes. By the end of that year, 119,000 tonnes of cod were caught, which was 325% over the recommendation. The TAC for 2004 was set at 61,600 tonnes, which was high above the recommendation of the ICES of 43,000 tonnes. As shown, the TACs are decreasing, but it is important that they are controlled and followed.

Every year a certain amount of cod that is not reported is caught. The unreported catches are not visible to controllers or the public. If the total reported catch in 2003 was 119,000 tonnes, the actual amount may have been much higher. Different control systems are ways of making catches beyond the agreements harder to hide and carry through. The European Commission has introduced a control system for the Common Fishery Policy, CFP, which among other things should lead to less unreported catches. The member countries themselves are responsible for the control in their own territory. At the National Board of Fisheries in Sweden, a centre for fishery supervision was established in 1998. This Fisheries Monitoring Centre supervises the positions of all vessels that are longer than 24 metres or fishing in special areas or for special reasons. The European Commission has required that all member countries must have this type of supervision system. A vessel monitoring system, VMS, as it is called, must be available for commission inspectors who will inspect the information if necessary. (If you know exactly when and where someone is fishing, it is harder to get away with unreported catches.)

Important fish stocks are being reduced partly because of the excess numbers of vessels compared to the available resources in the Baltic Sea. The European Commission has therefore decided to decrease the capacity of the fleet in order to restore the balance. The trend that the fleet is decreasing has already been shown. In 1998 there were a

total of 100,000 vessels in the European fleet and in 2002 there were 90,000. This speaks for all Europe and only partly for the Baltic Sea but still demonstrates the trend. The Swedish Society for Nature Conservation says in one of their requirements for sustainable fishing that the tonnage of the fleet is decreasing, but the capacity of the ships is increasing. This is due to the improvements that have been made to the equipment. They require that the total catch capacity, not only the fleet size, must decrease.

All vessels that are longer than 17 metres are carefully controlled with a fishery log that has to be completed after every fishing trip.

The Fishermen's Diary must contain:

- Day, month and year
- The number of the fishing effort and the registration number of the vessel
- Position (according to the ICES rectangles that divide the Baltic Sea into eleven subdivisions)
- Fishery zone
- Type of fishing equipment and number of nets and hooks used
- Smallest mesh opening and hook size utilized
- Time of the fishing effort in hours and minutes including soak time
- Catch retained on board according to weight in kilos

In 2000 the European Council proposed that the commission should set up a recovery plan for cod. The plan had to ensure that quotas were not exceeded so that spawning fish could be protected. It also contained rules about how to make fishing equipment better so that immature fish would not be caught.

There are four different methods mainly used when fishing for cod:

1. Bottom trawl: The vessel drags the net along the bottom of the sea, catching all fish in its way.
2. Trap: A trap of net is placed at the bottom of the sea. Once the cod is trapped, it is impossible for it to get out due to the trap's shape. The different areas of the trap form a labyrinth. It has an entrance with a big opening and a small ending where the fish gets stuck.
3. Danish seine: Bait is placed in the end of the Danish seine and the cod is tricked to go into it. When filled with fish, the net is slowly dragged towards the surface.
4. Gillnets: A long net is placed on the bottom of the sea. The mesh openings are the size of a cod's head and when it tries to swim through an opening it gets stuck. Up to 50 percent of the total catch of cod in the Baltic Sea is caught this way.

It is prohibited to use trawls, Danish seines, or gillnets having a mesh opening (measured when wet) smaller than the sizes listed below:

- Gillnets, 110 millimetres
- Trawls and Danish seines, 105 millimetres

Employment in the fishery sector is decreasing notably around the Baltic Sea. For example in 1970 there were 7000 fishermen in Sweden, but today this figure is approximately 2000. The majority of fishermen used to be self-employed but as a result of a larger fleet and fewer companies, most fishermen nowadays work as employees of a larger company. Since machines have taken over the work that men used to handle, fewer fishermen are needed. Local fish processing industries and coastal communities dependent on the fishing industry are also in crisis. Among the people who are employed in the fishing industry, only about a third are fishermen. The rest are engaged in the processing procedure.

The modern fishing industry in the Baltic Sea is far too effective to be sustainable. According to experts of cod biology, it is necessary to make some changes to the fishery policy. A non-fishing period must be set during the summer, there must be a minimum size for the cod that is legal to catch, and fishing equipment needs to be improved. The fishing quotas agreed upon obviously need to be followed. Coalition Clean Baltic, CCB, stated in a press release in November 2004 that cod is threatened with extinction. To give the cod a chance of further survival, the environmental sector, instead of the fisheries' sector, has to get the power to decide more about the biological limits of fishery resources. The cod population is being halved every year and overfishing must come to an end.

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The International Campaign "Look Around" took Place at Lapės Basic School

5 June is World Environment Day.

On 15 December 1972, the General Assembly of the United Nations designated 5 June as World Environment Day, thus promoting environmental protection around the globe.

In honour of this day, we have organised the international campaign "Look Around". The initiator of this campaign is the International Baltic Sea Project. Part of the activities within UNESCO's Associated Schools Project Network (ASPnet) includes the Baltic Sea Project (BSP), which has been carried out since 1989. The key idea of the project was to unite schools of the nine Baltic Sea countries—Finland, Sweden, Denmark, Germany, Poland, Lithuania, Latvia, Estonia and Russia—in order to seek solutions to common regional environmental problems.

Lapės Basic School also takes part in this project. Hence, on 5 June, pupils from our school organised the campaign "Look Around". Kites—the highlight of the campaign—rose into the sky; their aim was to encourage everyone to look around and decide what environmental problems are relevant where we live. When we know the problems, we will start tackling them. During the campaign, flyers were distributed explaining the goals of the campaign itself, as well as global environmental issues. We talked about possibilities for Earth's survival.

Later, all participants moved to the forest where they engaged in an environmental clean-up. Rubbish is the worst problem in the forest. There is a club of young forest friends "The Black Stork" at Lapės Basic School, the members of which aid the foresters. In autumn, we collected rubbish in the forests together with members of the club but even now, in spring, we still have more work to do. It does not make us happy.

The campaign was attended by pupils and teachers of Lapės Basic School, Lapės neighbourhood staff, children and teachers of Lapės kindergarten and foresters of Vytėnai Forest District under the Kaunas State Forest Enterprise.

Only together we can help the Earth!

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Photos: Sodra Jonceva

Campaign "Let's Clean Up the World"

When wandering along the banks of the Vilnelė or Neris rivers at their points of access to Vilnius City, and breathing in the spring aroma of unfolding buds or the golden-hued autumn air, it is very painful to see nature scarred by the cruel traces of human activity: from plastic and glass bottles, old tyres and discarded household appliances to motley piles of construction waste. These sights cannot be ignored by the active, nature-loving children from the "Green Tourists" club. Every year (now for the fifth successive year), in spring and autumn, members of the "Green Tourists" club organise nature clean-up campaigns, and are active participants of the nature clean-up campaigns organised by various regional parks not only in Vilnius, but also in other parts of Lithuania.

The valley of the Vilnia River in the environs of Karklėnai in Vilnius District is a particularly polluted place which the Green Tourists have paid special attention to. Two years ago, members of the "Green Tourists" club N. Mastenica, N. Černiuk and V. Polonskaja began exploration of the environs of the Vilnia valley. During their research, the girls determined that the colony of sand martins in the environs of Karklėnai had become extinct, and the number of frog-hunting storks had reduced.

In the environs of the Vilnia valley, the girls took notice of many dead hedgehogs, moles and rodents—these animals had died as a result of getting stuck in old glass jars and cans.

"Through observation of nature on a local level, we understood the extent to which humans are able to harm the environment. Only people completely devoid of any sense of responsibility can dump rubbish in such beautiful places without consideration for the damage it causes. Due to the enormous quantities of rubbish and pollution, birds and animals become extinct. Construction waste dumped into the ravines of Vilnelė's valleys is washed into the Vilnia River by rainwater and melt-water, and fish die off as a result," the sixteen-year-olds explained.

Residents of the environs have made the forest the dumping ground for bottles, metal packaging, paper, polythene, old tyres and various construction wastes: cement, slabs of concrete, lime, paint, etc.

Therefore, as is the case every spring, 40 environmentally conscious activists collected almost 2000 kg of waste. As it is difficult to deliver so much waste to landfill, several well known Lithuanian enterprises (the producers of Tichė Active and **EMP Recycling UAB**—one of the largest recyclers of electronic and vehicle waste) agreed to aid in the clean-up.

Almontas Kybartas, chairman of the Board of EMP Recycling UAB, said that the company joined the initiative of the Green Tourists to clean the banks of the Vilnia River because water cleaning is directly related to the environmental activities of EMP Recycling.

"For four years now, we have collected discarded small and large household appliances and vehicle waste from residents free of charge. *„We are continuously educating the public about the reasons for which these wastes cannot be disposed of in household waste containers placed next to residential buildings, or left on the outskirts of forests or lakes. Even if an item as small as a battery is not recycled, and is lying, for example, on the riverbank, it will leak harmful substances if damaged, which will then make their way into the groundwater together with rainwater, and ultimately into the nearby river. By collecting and recycling hazardous waste free of charge, we contribute to reducing the pollution of water,"* Mr Kybartas said.

He notes that the support strategy of EMP Recycling includes aiding ecological and environmental protection projects, because the company is concerned with environmental issues such as global warming, water contamination, depletion of the ozone layer and others.

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Photos: authors

Exploration of the Velniabliūdis Bog *in the Prienai District*

A bog is an excessively wet area of land overgrown with specific vegetation. Over time, peat deposits build up in bogs from plant remnants. There is a single bog called the Velniabliūdis Bog (the Bog of the Devil's Bowl) in the Prienai District, on the territory of the regional park situated on the meandering River Nemunas. It is reminiscent of a bowl filled with a thick layer of peat. In the past, peat was excavated here for mud baths that were offered at the healing sites in Birštonas. Later, a natural process of bog restoration began. Acorrding to legend, people simply used to refer to this area as the morass. Anelė Kederienė, who was born in 1919 and grew up near this morass, remembers the legend of the origin of its name. The morass was home to pinchuks—little devils who used to scare people. Once a man was returning home carrying several bowls. He was scared out of his wits by devils who surfaced before his eyes out of nowhere, so he dropped all his bowls and ran away. Ever since, the devils have been associated with bowls, and so the bog was renamed the Devil's Bowl (Velniabliūdis).

The goal of members of the informal education club "Young Nature Explorers" from the Prienai Žiburys gymnasium, was to evaluate the diversity and variation of species growing in the bog during the year.

The bog research was carried out during the month of May, 2008. It was established that the diversity of plant species in the bog differs from forest vegetation. Of course, some plants grow both in the bog and the forest, such as common pine, common heather, peat moss, cowberry and birch. The moss, however, grows more abundantly in the bog constituting 90% according to the projection cover.

Mosses found in the bog include peat moss, stair-step moss and red-stemmed feather moss. Trees and subshrubs make up only 30% of the flora and tend to be smaller than in other areas. Common pines and birches grow here. There is no great diversity in shrubs. Shrubs found in the bog include wild rosemary, bilberry, common cranberry and black crowberry. The most abundant species of plants in the grass cover category are water arum (***Calla pallustris)*** and common sedge (***Carex nigra)***.

The diversity of species in the bog is unique; 14 species of plants were found. According to the diversity of species, the area is attributed to the ***Vacciniatea uliginosi*** class.

In addition to regular observations, a an unconventional practical lesson was organised on 21 May this year, when some of the 2nd grade pupils under the supervision of the biology teacher and the project co-ordinator visited the Velniabliūdis Bog. Here the pupils became specialists in various fields: ornithology, biology, botany, dendrology, lichenology, mycology, etc. They searched for particular species in accordance with practical assignments and consulted Žydrūnas Preikša, the senior ecologist of the Nemunas River Regional Park on topics they were interested in. The pupils presented their collected information at a conference in the forest clearing. Here are the results of the work done by the lichenologists.

Lichens are symbiotic organisms made up of fungal hyphae and the cells of stoneworts or cyanobacteria. The algal cells contain chlorophyll, permitting them to live in a purely mineral environment by producing their own organic compounds using photosynthesis. The fungus

protects the alga from drying out and, in some cases, provides it with minerals obtained from the substratum.

The aim is to identify the diversity of species of lichens growing in the Velniabliūdis Bog and evaluate their abundance.

After examination of the biggest birches in the bog, eight species of lichen were identified: monk's hood lichen *(Hypogymnia physodes)*, oakmoss lichen *(Evernia prunastri)*, maritime sunburst lichen *(Xanthoria parietina)*, fringed rosette lichen *(Physcia tenella)*, tree moss *(Pseudevernia furfuracea)*, bristly beard lichen *(Usnea hirta)*, ambiguous bran lichen *(Parmeliopsis ambigua)*, and cup lichen *(Cladonia)*. The most frequently occuring species was the monk's hood lichen.

It is wonderful that there are always pupils who are interested in their environment, and who search, make discoveries and endeavour to be creative.

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Photos: Janė Miltenienė

Fall in love with **nature** through knowledge

The environmental club "The Green Home" was registered three years ago. This year, we carried out the project "The World and Me". Its main goals are to develop pupils' habit to respect, save and nurture all living and non-living things, and all that is created by nature and humanity; and to help them get to know the environment of the region, and the processes taking place in it.

With this goal in view, we organised an environmental expedition. We visited Žvėrinčius in the Ubiškė Forest District in Telšiai where pupils met with animals and learned about their biology. When preparing for the expedition, we collected information about trees growing in the Kurtuvėnai Regional Park: the monuments of nature (the six-trunk fir tree and the Bubiai poplars), the Svilė springs and the Girninkai hill. During the expedition, we learned about the geographical, biological and historical peculiarities of the Šiauliai region, and carried out research relating to the early blooming spring plants and rare plant species.

We organised an environmental conference where pupils from secondary schools, basic schools and gymnasiums of Šiauliai City and other cities presented their reports, and expanded and deepened their environmental knowledge of healthy living and natural sciences. Pupils acquired both theoretical knowledge and practical skills.

Every year, we organise a celebration "The Birds Return". We constructed and put up nest boxes not only in the territory of the gymnasium, but also in city parks and forests of the Ubiškė Forest District in Telšiai.

We organised poster exhibitions "Don't Burn the Grass" and "Nature Is Home For All". A great interest was shown in the competitive exhibitions "Best Nest Box for the Bird", "Paparazzi", etc.

We also set up an alpinarium in the territory of gymnasium.

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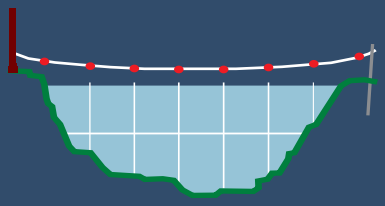
Photos: authors

Water Flow

1. Measuring the water

We supposed measure the amount of water flowing in our local river (Lilleaaen in Hadsten) in Denmark. At first we had to measure the cross-sectional profile of the river. We also needed to measure the current in the water.

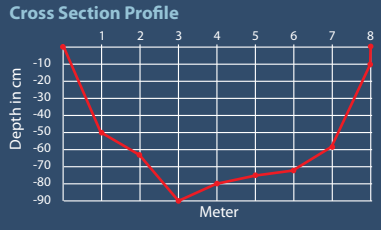
Because of the strong current we had to use a safety rope. That is very important to remember. One of the girls actually fell into the water, but because of the safety rope, nothing bad happened. The safety rope was marked with red marks every meter so that we could use it when we measured the river.



We started this experiment by putting our waders on. And then we walked down to the water and put up the safety rope. You have to throw it to the other bank, where it can be tied to a tree. On our own bank, we tied it to an iron rod. You have to use a hammer to fix the rod to the bank. Then the two persons with waders on jumped down into the water and started measuring.

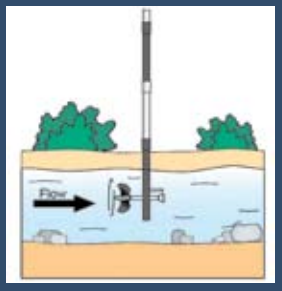
At first we had to measure the water depth. We did that with a stick with some marks every 25 cm. We used the red marks on the safety rope to find out where we should measure the depth of the water. On the figure above, the river is divided into 13 blue squares.

On the figure below we could make a drawing of the actual cross-section of the river (14 squares).



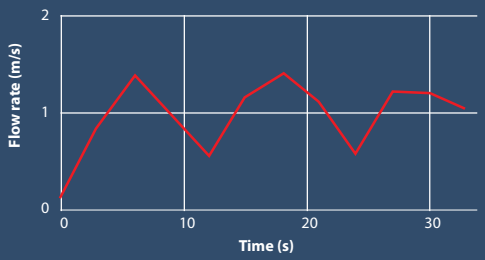
This drawing shows how the river bottom of the Lilleaa looks like in a town called Hadsten in Denmark. The picture is grove painted, but the real view of the river button is nearly the same.The blue line has been drawn to show the middle between the river bottom, where it is deepest, and the surface. And the purple line shows how the deep it is. The width from 0–8 is classified in meters, and the depth from 0–90 is in centimeters.

Now we had to measure the flow in the water in each of the 14 squares. When you are measuring the flow, you have to use a flow rate sensor. The sensor is actually a propeller on a stick. You measure the flow rate in the middle of every square. A wire leads to the other persons standing on the bank, and the result is show on the LabQuest (see below).

2. Technology

In this exercise, we were using the flow rate sensor and LabQuest to get information about the flow in the Lilleaaen River. Following we see an example of such a measurement (this graph is shown on the LabQuest). The flow rate is not constant, so we use the functions on the LabQuest to calculate the mean value (here 0.91 m/s).



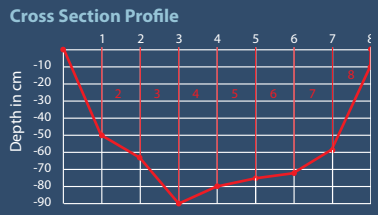
Put the cable from the flow rate sensor into channel 1 in the LabQuest. Then you're almost ready to receive data from the flow rate sensor to the LabQuest, but first you have to restart the display. That you do by going to 'Sensors', 'Zero' and then 'Flow Rate' in the menu at the top of the screen.

Now you get a clear screen and are ready to start. To start receiving data to your LabQuest you must push the green button in the bottom left-hand corner. To stop measuring, you push the button again. To get the average of your measurements, you go to to 'Analyze' and then 'Statistics' in the menu at the top of the screen. Then you get a lot of numbers and you should use the number 'Mean'.

3. Data

The data which we received from the Lilleåen River using the equipment we talked about was used to make a cross section profile of the stream.

We divided the cross section profile into 14 new parts so we could calculate the area. We named them, starting from the upper left corner, 1 and so on. See picture.



We measured how deep the river was and how wide it was. It was 8 meters wide, and 0–90 cm deep. We used the area formula to find the area of the cross section profile:

Triangle: ½ * width * depth

Square: Width * depth

Area	Calculation	Result
1 area	1*0.5/2	0.25 m^2
2 area	1*0.45	0.45 m^2
2.2 area	1*0.05 + 0.125*1/2	0.1125 m^2
3 area	1*0.45	0.45 m^2
3.2 area	1*0.175 + 0.275*1/2	0.3125 m^2
4 area	1*0.45	0.45 m^2
4.2 area	1*0.35 + 1*0.1/2	0.4 m^2
5 area	1*0.45	0.45 m^2
5.2 area	1*0.35 - 1*0.05/2	0.325 m^2
6 area	1*0.45	0.45 m^2
6.2 area	1*0.27 + 0.03*1/2	0.285 m^2
7 area	1*0.45	0.45 m^2
7.2 area	1*0.27 - 0.14*1/2	0.34 m^2
8 area	1*0.1 + 1*0.48/2	0.34 m^2
	Final result	**5.065 m^2**

We also found the flow rate.

We used a device specially made for this, a flow rate sensor. We got the data on our LabQuest. All flow rate results are in m/s.

Area	Flow	Area	Flow
1.	0.35	5.	0.35
2.	0.45	5.2.	0.42
2.2.	0.63	6.	0.62
3.	0.64	6.2.	0.54
3.2.	0.55	7.	0.42
4.	0.45	7.2.	0.2
4.2.	0.45	8.	0.06

Then we found out how much water ran through the areas in the river. And with help from that number, we found out how much water ran through the entire area.

We used this formula:

water stream (m^3/s) = area (m^2) · speed (m/s).

Area	Calculation	Water Flow
1 area	0.25 m^2*0.35 m/s	0.0875 m^3/s
2 area	0.45 m^2*0.45 m/s	0.2025 m^3/s
2.2 area	0.1125 m^2*0.63 m/s	0.070875 m^3/s
3 area	0.45 m^2*0.64 m/s	0.288 m^3/s
3.2 area	0.3125 m^2*0.55 m/s	0.171875 m^3/s
4 area	0.75 m^2*0.45 m/s	0.3375 m^3/s
4.2 area	0.4 m^2*0.45 m/s	0.18 m^3/s
5 area	0.45 m^2*0.35 m/s	0.1575 m^3/s
5.2 area	0.325 m^2*0.42 m/s	0.1365 m^3/s
6 area	0.45 m^2*0.62 m/s	0.279 m^3/s
6.2 area	0.285 m^2*0.54 m/s	0.1539 m^3/s
7 area	0.45 m^2*0.42 m/s	0.189 m^3/s
7.2 area	0.34 m^2*0.2 m/s	0.068 m^3/s
8 area	0.34 m^2*0.06 m/s	0.0204 m^3/s
	Final result	**2.34255 m^3/s**

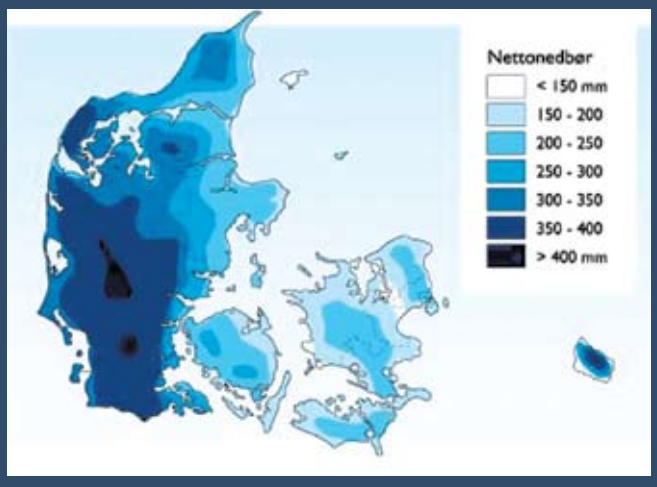
A total of four groups did the same exercise. Group 1 and group 3 stood in the same place, where the river was a bit wider. Groups 2 and 4 stood where the river was narrower.

	Group 1	Group 2	Group 3	Group 4
Area	5.1 m^2	3.8 m^2	5.2 m^2	3.8 m^2
Water Flow	2.3 m^3/s	2.3 m^3/s	2.6 m^3/s	2.2 m^3/s

We talked about how the water flow could be nearly the same every place (mean value 2.35 m^3/s). You can see that the area the water ran through was bigger at group 1 and 3. So how can it be that the same amount of water flows through? That's because the water flow rate at group 2 and 4 was higher than the place group 1 and 3 were. Consequently, 2.35 m^3 of water passes any cross section of the river every second.

We compared our results with the value we can calculate using data about the fall of rain per year, and how big the area that slopes towards Lilleaaen is.

The area where rain turns towards Lilleaaen above Hadsten is 301 km^2. Net rainfall (means rain minus evaporation and minus what goes to groundwater) is 250 mm/year (see the figure below).



We made the 301 km^2 to m^2 by saying 301*1000*1000 = 301.000.000 m^2.

Then we made the fall of rain for each year from mm to meters: 250 mm / 10 / 100 = 0.25 m.

We found out how many seconds there is per year by saying 60 * 60 * 24 * 365 = 31536000 sec.

We then found the value by saying:

$$\frac{301.000.000\ m^2 * 0.25\ m}{31536000\ s} = \mathbf{2.39\ m^3/s}$$

We compared this with our measured results and found out how many percent we were from this value.

We started with finding the average of our data: 2.3+2.3+2.6+2.2 = 2.35 m^3/s.

We were (2.39-2.35) * 100 = **1.7%** from the value.

The two values are very much alike. It is probably a coincidence. In wintertime in Denmark it can be quite rainy, so you could measure much more water, than you can calculate from the rain falling each year.

Photo: Image DJ

At last good ideas for keeping you warm: Rope skipping with waders and hot chocolate with cream.

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Biological stream judgment

1. Description of method

List of materials:

1. A book in which you can find the name of the organisms.
2. Two magnifying glasses.
3. A pair of tweezers.
4. A white container.
5. A keeping glass.
6. A poster of the different organisms.
7. A landing net.
8. Waders.

We have two different methods of analysing life in a stream, and we will try to describe them below.

Stamp method: At first you stand in the water with your back against the current. Then you take a landing net and place it in front of your foot, and then you stamp on the bottom of the stream. The material from the bottom detaches and flows into the net. Repeat it a couple of times, and then you have to put the material into the white container, so you can analyse the organisms from the stream clearly.

Peel method: You have to find a big stone, branch or plant on which there are organisms, and then you pull the organisms off with the tweezers and place them into the white container.

To find the right name for the organisms, you have to use some books, and apart from that we also have a poster, which works as an instruction for finding the species of the organisms. On the poster there are some pictures of the many organisms that could live in the stream. On the poster there are various questions that help you find the right organisms.

Photos: authors

When you come back from the excursion, you can make a list of the many types of organisms, and from this you can see for instance whether the stream is polluted or in good

condition. On the poster you can see the different kind of organisms that could live in the stream. You can also see a lot of lines with questions.

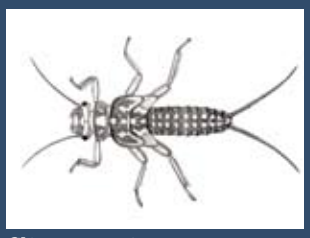
A study of a stream and its inhabitants

In the stream we found some different kinds of organisms

Plecoptera

Cúlex pipiens – Aédes species

Tipula

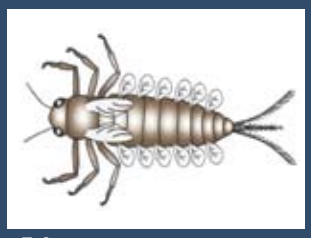


Chirónomus species

Gámmarus Pulex

Hirundinea

Dytiscus marginális



Ephemeroptera

Trichóptera

Oligochàéta

Tabánus species

2. Macro-index

After we found the organisms in the stream, we sorted them into different groups depending on what family they belonged to. We then used these different groups of organisms to help us find out the quality of the water. We did this by using the table below (macro-index table).

The macro-index table shows us the quality of the water with the use of the number of groups and the type of organisms you have found, The higher the number of groups and the more of the type at the top of the list, for example (plecoptera and ephemeroptera), the better the water quality. To use the table correctly, you must start with the animal that you have which is closest to the top of the list.

After using the macro-index table, you will have a number from 1–10. To find out the water quality, find the number on the key below (ecologic water quality). The quality can range from top, which is the best, and toxic, which is extremely bad.

Ecologic water quality
10 = Top
9 = Great
8 = Very good
7 = Quite good
6 = Moderate
5 = Fair
4 = Quite bad
3 = Bad
2 = Very bad
0-1 = Extremely bad
00 = Toxic

Macro-index table Key groups	Group numbers				
	0–1	2–5	6–10	11–16	17–20
	Index numbers				
Plecoptera	-	7	8	9	10
Ephemeroptera	-	6	7	8	9
Tricoptera	4	5	6	7	8
Gammurus pulex	3	4	5	6	7
Asellus aquaticus	2	3	4	5	6
Chirónomus species	1	2	3	4	-
Tübifex tübifex	1	2	3	-	-
Eristalis Species	0	1	2	-	-
Dead fish	00	-	-	-	-

Photo: Image DJ

3. Estimation

We found 11 different groups of organisms and we got the Plecoptera, so we can see that the stream's macro-index is at 9, which is nearly the best on the scale. The biological state of the stream is for that reason very good and not filled with pollution.

We also made a chemical examination in which we checked the phosphate and nitrate contents. If the stream is absolutely clean, then the phosphate content has to be 0.01–0.02 mg/L and the nitrate content has to be 0.1–0.9 mg/L. In the stream we tested, the phosphate content was 0.43 mg/L and nitrate content was 20 mg/L. These numbers are a bit higher than the numbers that would make the stream a good place for organisms to live. If the numbers fall to just half what they are today, then the stream would be so good that it would nearly come up to 10 in the macro-index scale.

Here were we:

We examined a stream called ***lille åen***. The stream flows across some of eastern Jylland and ends up in a river called ***Guden åen***, the only river in Denmark. We were in Hadsten, a town between Århus and Randers. We were at the place marked by the X on the map.

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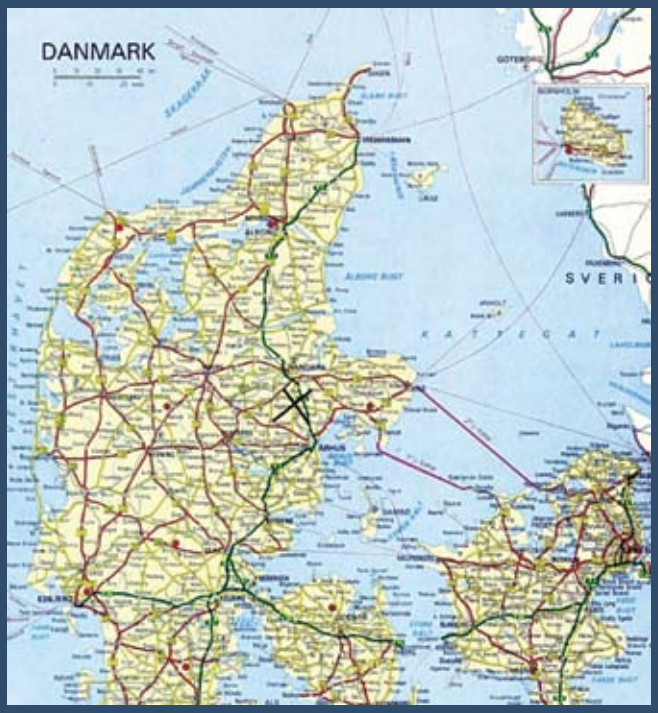

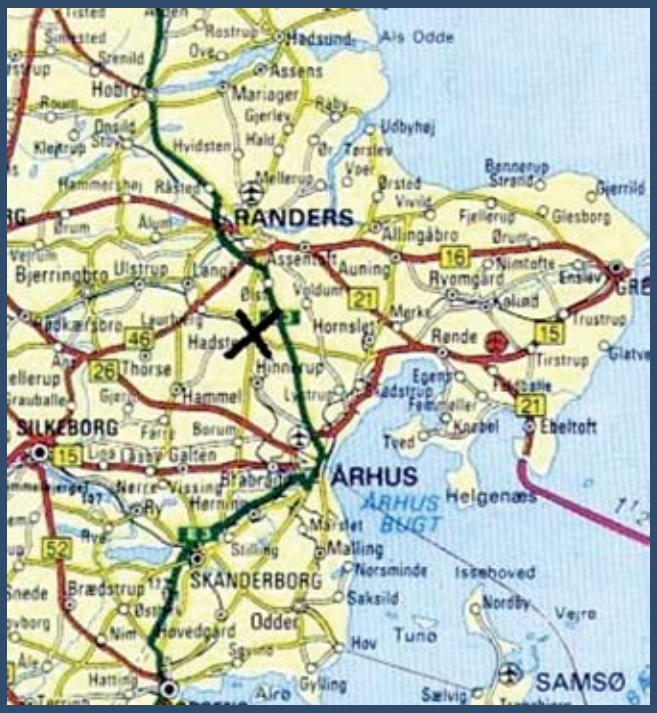

BSP coordinators

Latvia

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From 1 November 2007 to 1 November 2008, there were 17 active BSP schools in Latvia.

Two schools are working with the Water Quality in the Baltic Sea programme, 10 schools with the Rivers programme, seven with the BSP Coast Watch programme, 12 with the Phenological Studies programme, 14 with the Air Quality programme, eight with the Environmental History programme, and one with the Bird Ecology programme.

There are two forms of work to be used in the realization of BSP programmes: during lessons and out-of-class work. During lessons, BSP school teachers incorporate BSP programmes to achieve the learning outcomes defined in the subject standards of natural science (grade 1–6), biology (grade 7–12), chemistry (grade 8–12) and geography (grade 7–12). Out-of-class work includes hobby groups, clubs of interests, excursions, and camps.

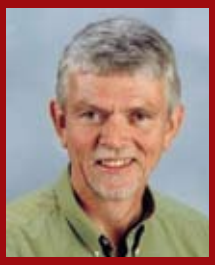
International activities:

- Teachers and students from three BSP schools participated in the international BSP conference called "Evaluation of the Environment", in Vilnius on April 9–12, 2008.
- Two teachers participated in the international teachers' training course called "Silesian Coalmine Region—Yesterday and Today, and Global Climate Changes", which was held on October 22–24 in Poland.
- Students took part in the competition entitled Tales and Legends in Baltic Countries in Poland.

National activities:

- We organized BSP teachers meetings in Riga on November 24, 2007 and on May 17, 2008. The main aims of the meetings were to exchange experience gained while working with the BSP programmes and information about participation in international BSP activities, introduce other participant to the different school activities, and discuss local and global environmental problems.
- On December 27, 2007, we organized a seminar for BSP students and teachers in Riga. Students visited the Riga Zoo and had an excursion in Old Riga.
- Every year students from BSP schools have participated in the National Environmental Project Olympiad with interesting projects. This year Vecpiebalga Secondary School students with a project entitled "Recycling of Household Biological Waste by Using Californian Red Worms" represented Latvia in the International Environmental Project Olympiad in Turkey.
- The main event this year was the BSP teacher training course entitled "Water Quality" in August 27–29 in Ventspils. Teachers made a chemical analysis of water samples from the Baltic Sea and Venta River. We also discussed how to improve the BSP Water Quality programme to encourage more schools to take part in this programme.

Denmark



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This year seven primary and lower secondary schools and seven secondary schools in Denmark participated in the Baltic Sea Project. All were very active institutions. Since Peter Uhl Pedersen was elected coordinator of the Coast Watch Programme, it was decided to use this programme very actively, and most of the schools made reports for this programme. In April there was a meeting for all ASP-schools in Denmark in Avedøre filmby (like a Danish Hollywood). The theme was using films in UNESCO-ASP programmes. There was space for meeting in the BSP group about Future Corporation, and a Nordplus Junior lecture useful for founding projects and setting up visits between schools in the Baltic region took place. Two schools applied for this programme but were unfortunately unsuccessful. We however gained experience that could be useful for the next time.

Most of the schools joined a Danish ASP-program called ***Pictures from the Future***, a school competition before week 9 2009. The products will be the students 'picture' of how they see the world in light of climate change and new technology. There will be an exhibition at the National Museum next year showing the results.

On September 25, students and a teacher visited Gdynia and joined Fishery Course no. 5, very well arranged by the Xth Secondary School in Gdynia. Marie Louise from Hedelyskolen writes in her report: "The group consisted of: a Russian teacher, a group from Estonia, two groups from Katowice and Kolbrzeg in Poland, and of course us from Denmark.

Monday morning we arrived at a BSP high school, where singing, music and speeches in the Polish style took place. The reception they gave us made us feel very special…

On Thursday we went back to Denmark and I had a feeling that my students had progressed on many points, not only having obtained knowledge about the Baltic Sea, and for me as a teacher this is also the target of such a trip."

In autumn 2008 (22–24 October), Favrskov Gymnasium and Egå Gymnasium arranged the autumn BSP networking meeting in Bjerringbro. They demonstrated our practical experiment for the other participating schools on an excursion to El-museet at Tange in Jutland. There was meeting about what to do next year:

Fishery Course no. 6 should take place in Køge or Sønderborg. There will be an annual meeting in Copenhagen with the theme 'climate change'.

Working for a course follow up the new Leaner Guide No. 8 about ecology of the town.

And, of course, participating in BSP programmes.

Examples of the reports from schools

Faurskov and Egå Gymnasium:

Spring 2008: One week of teaching, the title of the week was 'Sustainability'. We worked with sustainable development, energy, and ecological footprints. The pupils built windmills and measured the water flow in the local stream. Furthermore, they estimated the quality of the water from the life in the stream.

Christianshavns Gymnasium:

This Autumn Coastal Watch has been part of 1B's basic course in natural sciences. Class 1B has done their research on 'Amagerstrand', our nearby beach, which has recently been remodelled into an attractive beach for leisure purposes. The same class will next autumn conduct a more thorough investigation to see whether the area has changed.

Alssund Gymnasiet: Winter bird count (observations in January)—records have been made continuously for 10 years along Sonderborg Bay.

Air quality—investigations of the air at the combustion station in Sonderborg and in the city centre, since 1997, in cooperation with Meri-Pori lukio, Finland: sulphur in pine needles, heavy metals by sampling in mossballs (samplings are made over 60 days from November–February)

Water quality—since 2004, in cooperation with Meri-Pori lukio, Finland (samples are taken each year in November). Contact teachers.

Environmental History and climate change – in cooperation with Hindeburggymnasium Trier, Germany; II Liceum Ogolnoksztalcace in Katowice, Poland; Nacka Gymnasium in Stockholm, Sweden.

Hørup Centralskole

Nineteen students aged 13–15 (form 8 and 9) are attending a BSP class once a week. September 14–21, the class and two teachers travelled to northern Latvia, and stayed at a BSP school in Salacgriva. The students shared English, math and environmental lessons; participated in the Coast Watch programme; and learned about Latvian nature and culture. The students enjoyed sports competitions, dancing lessons, and a final disco evening with special youth activities arranged by the Danish students. Latvian families hosted the Danish students the whole week, and strong friendships were built.

The Latvian students were meant to revisit Hoer up Centralskole in Denmark in November, but unfortunately this class exchange programme did not receive grants from the Nordplus Junior Programme, and now the Latvian school is searching for grants. If money is found, the Latvian students should come to Denmark in April 2009, joining the programme we already have planned, including a Hans Christian Andersen lesson, hands-on physics lessons, a newspaper about school activities, the preparation of a typical national meal together, and as a part of a waste and energy theme, a visit to the local litter fuel power plant. Of course the students will visit the Baltic shoreline and compare our Coast Watch investigations. Besides setting up a website displaying the common experiences, the students will produce a PowerPoint presentation to show to the other students in form 9 and 8 (a total of 150 students) and a Danish report in the school paper, ***Sproejten***. Some of these items (***Sproejten***) are due in a few weeks, and some are to be completed later this school year.

Finland

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BSP work in Finland has mostly concentrated on making our own webpages. They should be ready by the end of this year. The total number of schools belonging to BSP is now about 20, and they represent different levels of education, including professional schools. We want to develop our work together with HELCOM and support their ideas to solve the problems of the Baltic Sea.

We took part in Agenda 21 NOW, phenological studies, and a competition called 'Tales and Legends of the Baltic Sea Area'. The feedback from students was positive. Poster models for BSP schools have been done and they will be published later.

We intend to have our national meeting in January 2009. It will deal with urban ecology. We plan to have an expert give a lecture and share some new ideas. In Porkkla Upper Secondary School, we had a course in which urban ecol-

ogy was studied by some new methods. Birds and bats (by means of a bat voice detector) were counted several times by the students, and this will be done every spring with these indicator species. To arouse the interest and the emotions of the students, the life of nesting birds was followed by cameras and computers. All notes about urban animals and plants were collected on a blog that was open to everyone.

Problems of the Baltic Sea can also be taught by e-learning, and the key method is problem-based learning. One group of problems has been translated into English. They will be presented at our national meeting, and they are also ready to be discussed at the international level.

Lithuania

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There are 28 schools in Lithuania. But one year before we had 30; we removed two schools from the list because they weren't active. Actually, not all these 28 schools are active and next year can bring more changes.

Ten BSP schools from Lithuania participated in the BSP international conference 'Evolution of the Environment'. They prepared and presented 13 reports.

In March there was a one-day seminar for BSP teachers entitled 'Active methods of learning about nature'. Fifteen teachers participated in that seminar. They took part in workshops and lectures about eco-sport, how to organize lessons in nature, and how to organize active discussions for students.

The summer camp 'Nature, creativity and me' for students was held in August. There were 25 students from the most active schools. They had ecodrama, pollution, and water analysis workshops; a Lithuanian folk lesson; a lesson about plants, their uses, and their beneficial and harmful properties; and a lecture and discussion on the topic "Global Greed of Humanity", and they participated in an extreme hike in a forest and a discussion after watching ***An Inconvenient Truth***, the film by Al Gore.

Three teachers participated in the international teachers' training course entitled 'Silesian Coalmine Region—Yesterday and Today, and Global Climate Change' in October in Poland.

Students participated in Phenological Studies, Air Quality, and Environmental History programmes.

Students and teachers wrote 28 articles for the BSP newsletter.

Poland

National coordinator:
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Number of schools: 85

Active schools: about 40

Participation in BSP programmes: every school sent a report to the programme coordinator

Written articles sent to international BSP newsletters:

—most active schools: X LO in Gdynia, III LO in Walbrzych

Written articles to the Polish BSP Newsletter No. 1 (1)/2008 – the first edition done by Polish National Coordinator Jolanta Mol

—Most active schools:

1. II LO in Katowice
2. III LO in Wałbrzych
3. 34 SP (Primary School) in Katowice
4. I LO in Miechów
5. X LO in Gdynia
6. Secondary School in Toszek
7. I LO in Krakow
8. III LO in Głógow
9. Complex of Upper Secondary Schools No 5 in Krosno
10. I LO in Nowy Sącz

Participation in international workshops/conferences:

16–20 April 2007, 'Vision and tradition. In the spirit of Linne towards a sustainable Baltic'—conference in Nacka-Stockholm

—Twenty students—the advisers of MEN (from four upper secondary schools)

May 2007, Meri-Pori Comp School

—Thirteen students and teachers participating in Pine Needle Project

Sept. 2008, 'Sustainable Fishery' in Gdynia, Poland. Organizer: Soren Levring

Two Polish Schools (X LO Gdynia, II LO Katowice)

Teacher training courses organized by the Polish national coordinator:

1. September 2007, 'Biological diversity in industrial areas of upper Silesia and sustainable development in the Baltic Sea region'

Participants: Forty teachers of twenty-four schools situated in twenty-one Polish cities

Programme: Three lectures about:

- biodiversity destroyed today, prevented tomorrow;
- paradoxes of antropopression;
- city as an ecosystem for plants—desert or great biodiversity

Four workshops: on water reservoirs, coal and metal heaps, and nature reserves

An excursion to the Jurassic mountains in Silesia Region

All themes were about environmental protection in post-industrial areas.

Lectures and photos on www.bsp-pl.org

2. International teacher training course in Katowice, Poland—'Silesian Coalmine Region yesterday and today and global climate change'—22–24 November 2008

Participants: Forty teachers from six countries: Germany, Latvia, Lithuania, Sweden, Great Britain and Poland and teachers-guests from a sister city of Katowice, Newcastle, Great Britain

Three lectures about mining in Silesia, post-industrial change in the environment, and climate change

Four different workshops:

- how to work with students in the EH programme;
- an excursion to mining heaps and lakes/ponds on the area after sand excavation;
- Visit to two coalmines: Staszic and Wujek underground—about 500 m. below sea level

Competitions

1. 'The Baltic today, yesterday, and tomorrow'—March and May 2007

Participants: 270 students from twenty-five primary and middle secondary schools from 11 different regions in Poland. Participants were asked to consider such aspects as the culture, traditions, customs, and landscapes of the Baltic Sea countries.

Winners: Six students from schools in Dziemiany, Kobiór, Siedlce, Tychy, Kraków, and Rostarzewo.

Prizes: electronic cameras, mp3s, eighty-one students received appreciation notes/diplomas

Published: on www.bsp-pl.org and in the Polish BSP Newsletter No 1(1/2008)

2. 'Tales and legends from the Baltic Sea region'—March–May 2008

Participants: about sixty teams (one–two students and one teacher) from Finland, Lithuania, Latvia, Estonia, and Poland

Every team sent a story written in English and the mother tongue and drew from one to four pictures to illustrate the legend

Winners:

I the team from Finland and Primary School/Poland

II Latvia/Poland

III Lithuania/Poland

Prizes: electronic cameras, - iPod, mp3s (sixteen prizes were awarded).

Published: on www.bspinfo.lt and www.bsp-pl.org

Translation from English to Polish

the Learners Guide No 5 'Baltic 21. An Agenda 21 in the Baltic Sea Region'—a book for learning and teaching sustainable development

Published: on www.bsp-pl.org

ESTONIA

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Programmes coordinators

Air Quality Programme

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In December 2007 and November 2008, schools were participating in the Air Quality Programme.

Observations were carried out by students in different parts of their countries (big and small towns, countryside, coast, inland, mountain, plain). According to the reports that were received, the least air pollution, as in previous seasons, was observed in Estonia, Llithuania and Latvia. A slight improvement in air condition in some regions in Poland, mainly those located near industrial centers, was also observed.

Country	No. of schools participating in AQ	No. of reports
Poland	4	16
Latvia	5	7
Lithuania	5	7
Estonia	2	3
Total: 4	**16**	**33**

Coast Watch Programme

Coordinator:
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Coastwatch is one of the oldest programmes in the Baltic Sea Project.

Every year students and teachers around the Baltic Sea are out at the coasts to investigate animals, plants, pollution and littering. The survey is usually done from 12 to 25 September. The results from this year's investigations are now coming back from the schools to the coordinator. But many schools conduct the investigation without sending the questionnaires. We would very much like to have more of these results to make it possible to make some statistics.

Last year we got questionnaires back only from Latvia (4)—thank you, Latvia! This year we have made agreements with several schools from different countries. And we therefore expect some more countries to send back results.

At the coast, there are a lot of possibilities for other investigations and activities. At this web page you can get inspiration for some of these activities: http://www.bspinfo.lt/program/cwatch.htm . If you have more or other good ideas, don't hesitate to bring them forward to the coordinator.

The first coordinator of Coastwatch was **Reet Kristian** from Estonia. She was working so hard and for so many years not only as national coordinator of BSP, but also simultaneously as program coordinator of Coastwatch. She has conducted many workshops and meetings in this regard throughout the years. On behalf of all participants in seminars and all participants in Coastwatch surveys, thank you, Reet! See you around!

Phenological Studies Programme

Coordinator:
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11302 Vilnius, Lithuania
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Phenological studies are a very useful outdoor activity. This programme doesn't require special equipment, it is easy to work alone or with group, and it motivates students to observe the environment the entire spring period.

This year 23 schools from Lithuania, Latvia, Estonia, Germany, and Poland participated in the Phenological Studies Programme. Classes, groups of students, nature clubs, and individual researchers observed 22 species, indicating spring periods. Total number of pupils that participated in this programme was 345.

Observation data had to be collected by 20 June.

This year a useful guide to birdcalls was placed on the BSP website. This attractive educational tool helps recognize birds such as the chaffinch, blackbird or skylark and motivate students to participate in this programme.

There is a useful "Work box" for almost all biological indicators. "Work Box" encourages students to continue research at home in class and promotes interest in others activities such as art, music, medicine, and folklore.

The instructions, guide to birdcalls, and "Work Box" are all provided in the paper "Phenological Studies" at www.bspinfo.lt.

Water Quality Programme

Coordinator:
Liesma Abolina
BSP Water Quality Programme
The National Programm Project
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Riga, LV-1029, Latvia
E-mail: liesma.abolina@inbox.lv

The areas of Water Quality investigations, 2008: Finland, Sweden, Russia, Estonia, Lithuania

Two BSP schools which participated in Water quality Programme and their results:

1. Jelgavas 1st Gymnasium

Jelgava, Latvia
Name of class/group: 10
Name of teacher: Viktorija Kagaine
Bottom conditions: stones, sand, mud
Description of excursion locality:
Resting place near the station at the mouth of Lielupe River; the coast is flat areas and Dunes

2. Riga Secondary School No 69

Riga, Latvia
26.09.2008.
Name of class/group: 10
Name of teacher: Inara Zevelte
Bottom conditions: sand
Description of excursion locality :
Riga Bay. Dunes, forest, sand.

We were at the designated area at 12:48. We were confronted with foggy weather conditions, although they did not impede our investigations. We began by collection a sample of the water and testing its content.

	05.05.2008.	26.09.2008.
	1. Latvia	2. Latvia
Benthos		
Lamellibranchia		
Mya arenaria	+	+
Cardium edule	++	++
Mytilus edulis	0	+
Macoma baltica	0	++
Pisidium amnicum	0	++
Anodonta cygnea	+	+
Gastropoda		
Littorina sp.	0	+
Hydrobia sp.	0	+
Lymnae sp.	0	0
Theodoxus sp.	0	0
Annelida		
Oligochaeta	0	0
Polychaeta	0	0
Crustacea		
Isopoda	+	+
Amphipoda	0	+
Decapoda	0	0
Balanus sp.	+	0
Insecta		
Red Chironomus sp.	0	0
Other insect larvae	+	0
Macroalgae		
Chlorophyceae		
Ulva sp.	0	+
Enteromorpha sp.	0	0
Cladophora sp.	+	++
Fucophyceae		
Fucus sp.	++	++
Pilayella sp.	+	++
Bangiophyceae		
Furcellaria sp.	++	0
Polysiphonia sp.	0	+
Delesseria sp.	0	+
Seed plants		
Zostera sp.	+	+
Phragmites sp.	0	0
Potamogeton sp.	+	+
Myriophyllum sp.	0	+
Plankton		
Phytoplankton		
Diatomophyceae	0	0
Dinophyceae	+	0
Chlorophyta	+	0
Cyanobacteria	+	0
Zooplankton		
Cladocera	0	0
Cocepoda	0	0
Rotatoria	0	0
Protozoa	+	0
Other observations		
In water:		
Salinity (‰)	-	-
Temperature (°C)	+ 9	+5
Visibility (m)	-	-
Epiphytes	0	-
In sediment:		
Redoxcline (mm)	-	-

Bird Ecology Programme

Coordinator:
Andrzej Sliwinski
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The springtime bird count is still less popular than the one that takes place in winter.

I personally don't know the reason for such behaviour. Maybe in spring there are too many bird species and properly distinguishing them demands more effort and knowledge.

It is also possible that pupils are busier at school and don't have enough time to do the counting. In spite of all these obstacles, there are still schools that have done the observations.

These schools are:

1. III Liceum Ogólnokształcące im. Mikołaja Kopernika w Wałbrzychu
2. Szkoła Podstawowa nr 53 przy Specjalnym Ośrodku Szkolno-Wychowawczym nr 1 w Bydgoszczy
3. I Liceum Ogólnokształcące im.T.Kościuszki w Miechowie

Environmental Measurements Programme

Coordinator:
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Common environmental research in the entire BSP area.

Methods used: bio-indicators and physical and chemical analyses.

Outside partners: industrial, municipal, and scientific laboratories.

Now going on: Pine Needle Project, Chemical Water Analysis Project, Moss Bag Study

In studying the state of nature, we seek new ideas (like the Swedish Disc Study). We would also like to be the growing ground for new friendship school nets.

The Pine Needle Project

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Eighteen schools from 10 countries participated in the Pine Needle Project. The state of the wax layer upon the needles was examined by scanning electron microscope pictures and sulphur content was examined by the X-ray fluorescence method. For these studies, we got help from the industrial laboratories of Kemira Pigments. At the end of May, we had our international environmental camp school, and then our guests also visited Kemira labs in order to see how this kind of measurement can be done. The participants in the Pine Needle Project each year get a report that includes the measurement results of all participating schools.

The average contents of sulphur were highest in 1999. After that there was a decrease, but the values have been about the same since 2003. For some reason, the state of the wax layer upon the needles has been very bad for several years.

Chemical Water Analysis Project

Coordinator:
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Total nitrogen [N_{tot}] and total phosphorus [P_{tot}] in different parts of the Baltic Sea, since 2004

Participating schools: ten schools from six countries (2008) With regards to new members, the applications for joining our group can be sent to the following e-mail address: anja.hokajarvi@pori.cedunet.fi. I would especially like to get sea water samples from you. The schools get instructions and bottles in the middle of October and the sampling time will be at the beginning of November. The samples are measured by the Finnish Institute of Marine Research. The schools will get the report about results in order to make their own conclusions.

The recommended way to do the sea water sampling would be to take one sample from the coastal waters and another from the open sea area. To get the open sea area sample, we would suggest for instance asking help from some fishermen, or maybe it would be even easier to ask help from harbour pilots. The exact descriptions of the

sampling places are also needed (the location coordinates if possible).

Students' part: Students can take samples, draw maps, pack and mail samples, and take part in the international BSP Project. As samples are being taken and after the report is received, it is easy to discuss the importance of pure water—how we can save our environment for future generations! Everyone can have an influence by taking small steps forward!

Environmental History Programme

Coordinator:
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Dear friends!

I want to start this report with a big excuse: I haven't done my job as an international co-ordinator for ***Environmental History*** in the Baltic Sea Project good as I should have.

I can see two main reasons for that:

- I have no money. It is certainly a big problem when you don't even have money to travel to meetings like this in Vilnius. I think that we should arrange some kind of general budget for this these kinds of meetings. This is certainly a problem if you are from Sweden.
- My next problem is lack of time. In my community, we have been told that we have to work much more and harder for the same salary. The time we had just a little bitwe we had just a little bitspend educating pupils hawe had just a little bitwe had just a little bits risen quite steeply. That means that time for other kinds of schoolwork has been reduced to a minimum.

My report for 2008 begins where 2007 ends. I have nothing to report. Therefore I read the latest newsletter with a smile on my lips: There are two reports and one workshop in the text. The reports are both from Lithuania and the writers are Lina Brazaitiene from Lapes Basic School and Vilma Dirzyte (teacher) and Sima Simkute (student) from Jonas Basanavicius Secondary School, Kaunas. Hopefully there are more environmental history activities in our BSP schools than has report.

There is a problem with my engagement as an international co-ordinator in environmental history: I have permanent bad conscience. I don't do enough as a co-ordinator, and I have enumerated the reasons to the problem above. I don't know what to do, but I think that some kind of general budget is necessary so that it is possible for we had just a little bit people to attend meetings.

I don't know whether I want to stay and I don't know whether you want me to stay. If you are a co-ordinator, you must at least take part in the co-ordinators meetings.

Rivers Programme

Coordinator:
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Fax. 00460 8 7188298
E-mail: susanne.mellvig@nacka.se

Oicosophy Programme

Coordinator:
Volker Stiehl
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BSP meetings and conferences in 2009

2008 December -2009 February	Photo competition "Sources and energy in Baltic landscape"	Hosted by Poland E-mail: jola.mol@pro.onet.pl
April	"Agenda 21 NOW!" internet conference	Hosted by Germany E-mail: martin.jarrath@agenda21now.org
21 April - January	Drawing competition "Phenological studies in your own area"	Hosted by Poland E-mail: jola.mol@pro.onet.pl
26-30 April	International conference "Vision and tradition" in Nacka and Stockholm	Hosted by Sweden E-mail: susanne.mellvig@nacka.se
24-29 May	International camp-schools in Pori, Meri-Pori Upper secondary	Hosted by Finland E-mail: simo.korpela@dnainternet.net
7-9 August	"Climate change" international conference in Sonderborg	Hosted by Denmark E-mail: soren.levring@sonderborg.dk
14-16 September	International event "Sustainable fishery No. 6"	Hosted by Denmark E-mail: soren.levring@sonderborg.dk
16-19 September	Final BSP conference in Vilnius	Hosted by Lithuania E-mail: m.simanaviciene@gamtininkai.lt
5-7 November	BSP National, general, and programme coordinators meeting in Latvia	Hosted by Latvia E-mail: velga.kakse@isec.gov.lv

Contributions:

Would you like to contribute to our Newsletter?
You are very welcome!

We are looking forward to receiving and publishing your contributions, such as:

- accounts of your work
- art works for the covers (size: 42x24 cm)
- letters to the editor, in which you are welcome to express your opinion on various environmental issues and articles published in the Newsletter
- newspaper and magazine clips presenting environmental issues in your country (the original article must be included)
- activity pictures presenting you and your students performing the BSP activities

There are, however, a few rules which you HAVE TO observe if you want your article to be published in the BSP Newsletter. There are:

1. Keep your articles short, precise and interesting
2. All contributions are to be e-mailed to
m.simanaviciene@gamtininkai.lt
or sent by post (on CD) to:
Miglė Simanavičienė
Lithuanian Young Naturalists' Centre
Dziaugsmo St. 44
LT-11302 Vilnius, Lithuania

3. No article is to exceed two A4 pages (text plus pictures)
4. All articles are to be composed as **WORD** documents
5. Please **DO NOT** include any photos, pictures, illiustrations or any other scanned materials direcly **IN** the Word document; they are to be enclosed as **SEPARATE** attachments
6. All photos and illiustrations are to be saved in **JPEG** format (more than 1 Mb size)

The next issue will be published in June 2009.

Webmaster:
Sergej Asociakov, info@gamtininkai.lt
www.bspinfo.lt

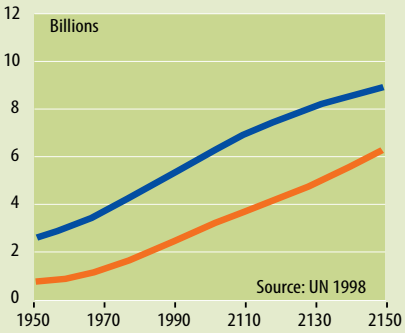
BSP teacher,

help your pupils change future city life!

WRITE A CHAPTER FOR THE NEXT BSP LEARNERS' GUIDE ON "URBAN ECOLOGY"!

On a global scale, there are now more than six billion people on Earth and of them three billion in towns and cities. By 2050, the UN expects there to be nine billion on Earth and of them six billion in urban areas. All growth in population will appear in towns and cities.

Thus, in the next 40 years, cities must be extended to double their present size — i.e. new towns must be built for three billion people in 40 years.



Big cities as part of the total World population 1950-2050

Due to the expected climate changes, the arable land in many semi-arid countries will dry and undergo desertification. People will be forced to flee from these areas — to neighbouring urban areas and cities or to towns in other countries.

Most of these cities are located on the coast, and the centre is often a very low "downtown", which will be flooded by an increase in the sea level. This further increases the need for newly built urban districts "uptown".

Hence the earth will need new towns for probably four billion people or more within 40 years. How will this happen?

Cities are the most consuming regional installations: Nearly all resources must be transported to town: water, food, goods, building materials, and energy. And most of the production and waste must be sent far away if the city is to avoid poisoning. A demanding arrangement. Unsustainable. Energy-wasting.

This is why we need a handbook, the Learner's Guide, to point out the most promising solutions for our pupils to avoid this future scenario of would-be suicide for cities. Sustainable solutions may be better town planning for less traffic; recycling of resources, water household and cleaning; better insulation and heat technology for less energy consumption; sustainable energy technology (geothermal heat, wind, sun and wave power, fuel cells, nuclear power[?], biomass); new transport technology; and a changed urban lifestyle.

How?

This is a question for all of us. The Learners Guide No. 8 should build on the same tradition as the former seven guides for describing the real state of the problem and deliver plans for interdisciplinary teaching of our pupils and students in order to make them aware and competent actors in their future (urban) life as citizens.

Do contact your national coordinator about your ideas and educational outlines, and you will be welcomed to the editorial group as a contributor to the guide. The editorial work will be followed by a teacher training course during week nine in 2009 at a site in one of the BSP countries in which promising new solutions for urban ecology are at hand. The Learners Guide should be printed by 1 June 2009.

Per Werge
Editor
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